

Firms & Development: A Progress Report

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- ▶ Early ideas were the basis for many theories of endogenous growth in 1980s/90s (Krugman, 1987; Murphy, Shleifer and Vishny, 1989; Rodriguez-Clare, 1996).
- ▶ But by the time I was doing my PhD, circa 2000, growth had largely disappeared from PhD-course syllabi in development.

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- ▶ But to sustainably raise living standards of the poor, there's no avoiding the big question of what drives growth.

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 - ▶ Key public-good providers:
 - ▶ Robin Burgess & Chang Hsieh’s conference series on “industrial development” (with inspiration from John Sutton).
 - ▶ International Growth Centre conferences & funding.
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 - ▶ PEDL, led by Chris Woodruff.
 - ▶ Area has also benefitted from:
 - ▶ Growing availability of micro-data on firms.
 - ▶ Policy-maker interest in innovation/industrial policy.
 - ▶ Growing willingness of governments, NGOs, funders to support experiments at firm level.

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 1. Knowledge spillovers.
 2. "Demand-pull" effects.
 3. Contractual frictions in upgrading.
 4. Management practices.

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- ▶ Idiosyncratic selection of studies that speak to microfoundations of growth and meet high (“applied micro”) empirical standards.
- ▶ I'll draw on a recent JEL review (Verhoogen, 2023).

Knowledge Spillovers

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 - ▶ Conley and Udry (2010) on pineapples:
 - ▶ Good news from information neighbors increases adoption, conditional on choices of geographic neighbors.
- ▶ Related work: Duflo and Saez (2003), Bandiera and Rasul (2006), Banerjee et al. (2013), BenYishay and Mobarak (2019), Beaman et al. (2021).

Knowledge Spillovers (cont.)

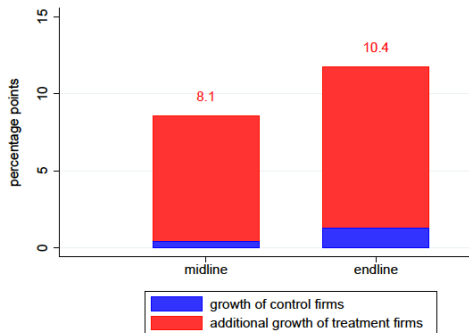
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Knowledge Spillovers (cont.)

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- ▶ Randomly assigned 2,820 Chinese managers into groups that met monthly for one year (or no-meetings control).
- ▶ Large effects on revenues, profits, employment, assets, utility cost (including electricity), TFP.
- ▶ Related work: Fafchamps and Quinn (2018).

Figure 1 Effect of meetings on firm revenue

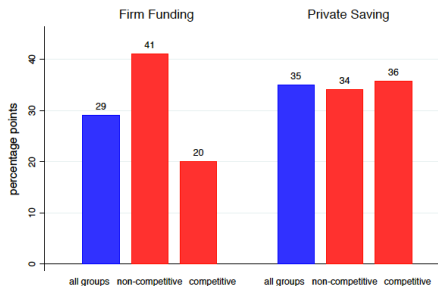


Source: Cai & Szeidl, VoxDev 2017.

Knowledge Spillovers (cont.)

- ▶ In cross-cutting experiment, randomly seeded two types of information:
 - ▶ Grant opportunity for firms (rival).
 - ▶ Savings opportunity for managers (non-rival).
- ▶ Diffusion was lower for rival opportunity when there were more direct competitors in group.
- ▶ Related work: Hardy and McCasland (2021).

Figure 2 Information diffusion rate



Source: Cai & Szeidl, VoxDev 2017.

Knowledge Spillovers (cont.)

- ▶ Some open questions:
 - ▶ Do we see similar effects for production technologies?
 - ▶ Do the sales/profits effects reflect flows of knowledge or other benefits of networking?
 - ▶ Are the spillovers large enough to justify public subsidies?

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 - ▶ Studies that emphasize export orientation tend to focus on scale and productivity effects, rather than nature of demand.
- ▶ But evidence has accumulated that the nature of demand matters for firm behavior.
 - ▶ Demanding customers can “pull” the upgrading process.
 - ▶ In the spirit of trade literature at higher level of aggregation (Burenstam Linder, 1961; Schott, 2004; Hummels and Klenow, 2005; Hallak, 2006).

Demand-Pull Effects (cont.)

- ▶ Verhoogen (2008): destination-market income drives quality composition within firms.

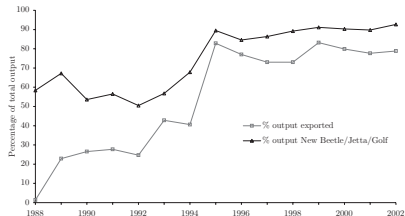


FIGURE IV
Exports, High-quality Models as Percentage of VW Output
Notes: Output measured in physical units. Omitted model from upper curve is the Original Beetle. Data from bulletins of the *Asociación Mexicana de la Industria Automotriz* (Mexican Automobile Industry Association).

- ▶ On average in manufacturing, ISO 9000, wages respond to increase in exports.
- ▶ Subsequent work suggests effects are driven by income at destination, not export volume per se (Brambilla et al., 2012; Bastos et al., 2018).
- ▶ For convenience, I modeled upgrading as a shift between (known) quality levels.

Demand-Pull Effects (cont.)

- ▶ Atkin, Khandelwal and Osman (2017): quality upgrading → learning.



- ▶ Randomized initial export orders among Egyptian rug producers.
- ▶ Tracked detailed quality indicators.
- ▶ Had producer weave identical rugs under laboratory conditions.

TABLE VIII
IMPACT OF EXPORTING ON QUALITY LEVELS

	Control mean	(1) ITT	(2) TOT
Panel A: Quality metrics			
Corners	2.98	1.11*** (0.12)	1.70*** (0.11)
Waviness	2.99	1.10*** (0.12)	1.68*** (0.10)
Weight	3.08	1.07*** (0.11)	1.63*** (0.11)
Touch	3.12	0.40*** (0.06)	0.66*** (0.07)
Packedness	3.11	0.89*** (0.11)	1.59*** (0.12)
Warp thread tightness	3.05	0.83*** (0.10)	1.49*** (0.12)
Firmness	2.98	0.87*** (0.11)	1.60*** (0.12)
Design accuracy	3.17	0.79*** (0.10)	1.41*** (0.12)
Warp thread packedness	3.05	1.07*** (0.11)	1.65*** (0.11)
Inputs	3.07	0.89*** (0.10)	1.62*** (0.12)
Loom	2.02	0.03 (0.02)	0.05 (0.04)
<i>R</i> -squared		0.44	0.60
Observations		6,885	6,885
Panel B: Stacked quality metrics			
Stacked quality metrics	2.96	0.79*** (0.09)	1.35*** (0.08)
<i>R</i> -squared		0.39	0.54
Observations		6,885	6,885

Demand-Pull Effects (cont.)

TABLE XI
QUALITY AND PRODUCTIVITY ON IDENTICAL-SPECIFICATION DOMESTIC RUGS (STEP 2)

	Master artisan			Professor		
	Control mean	(1) ITT	(2) TOT	Control mean	(3) ITT	(4) TOT
Panel A: Quality metrics						
Corners	3.23	0.72*** (0.14)	1.05*** (0.17)	3.31	0.29** (0.13)	0.43** (0.18)
Waviness	3.17	0.55*** (0.14)	0.80*** (0.18)	3.31	0.25** (0.12)	0.36** (0.16)
Weight	3.60	0.62*** (0.13)	0.91*** (0.16)	3.64	0.58*** (0.17)	0.86*** (0.25)
Packedness	3.30	0.77*** (0.13)	1.14*** (0.15)	3.28	0.28** (0.11)	0.42*** (0.15)
Touch	3.29	0.52*** (0.11)	0.76*** (0.14)	3.27	0.36*** (0.12)	0.52*** (0.16)
Warp thread tightness	3.00	0.51*** (0.09)	0.74*** (0.11)	3.30	0.25** (0.12)	0.36** (0.16)
Firmness	3.21	0.71*** (0.14)	1.04*** (0.17)	3.23	0.29** (0.12)	0.43*** (0.16)
Design accuracy	3.65	0.53*** (0.11)	0.77*** (0.15)	3.45	0.27** (0.11)	0.40*** (0.15)
Warp thread packedness	3.05	0.87*** (0.14)	1.28*** (0.17)	3.20	0.39*** (0.12)	0.58*** (0.16)
<i>R</i> -squared		0.21	0.34		0.11	0.14
Observations		1,680	1,680		1,667	1,667

	Control mean	(1) ITT	(2) TOT
Time (in minutes)	247.0	-5.67 (6.6)	-8.3 (9.5)
<i>R</i> -squared		0.84	0.84
Observations		748	748

Demand-Pull Effects (cont.)

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Demand-Pull Effects (cont.)

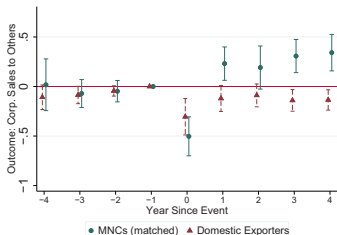
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- ▶ Matching design: compare suppliers to MNCs vs. suppliers to other types of firms.



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(F) Domestic Exporter, Corp Sales to Others

- ▶ Sales, employment, TFP of new MNC suppliers ↑.
- ▶ Other buyers of new MNC suppliers:
 - ▶ Larger.
 - ▶ Higher export/import shares.
 - ▶ Longer relationships with suppliers.
- ▶ Suppliers appear to learn from (and gain reputation from) MNCs.
- ▶ Qualitative evidence of changes in business practices to appeal to MNCs.

Demand-Pull Effects (cont.)

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 - ▶ Are learning effects especially strong at high-quality ends of industries? If so, why?
 - ▶ Are technologies used to produce higher-quality goods particularly inappropriate for developing-country factor proportions?

Contractual Frictions in Upgrading

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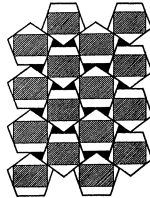


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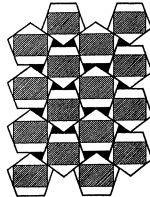
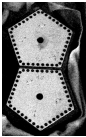


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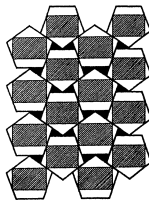


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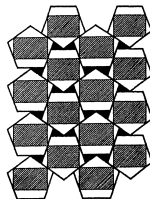


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- ▶ 1st experiment: technology drop led to puzzlingly little adoption.
 - ▶ Firms cited worker resistance as key barrier.
- ▶ 2nd experiment: incentives to workers to share information increased adoption.
- ▶ Piece rates may have been optimal in static technological environment, but discouraged sharing of information about new dies.

Contractual Frictions in Upgrading (cont.)

- ▶ Hansman et al. (2020): firms vertically integrate to solve sourcing problem in Peruvian fishmeal.
- ▶ Use quotas in main competitors (Denmark, Iceland, Chile) as source of variation in demand for (observed) quality.




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- ▶ Integrated boats stay closer to port \Rightarrow fresher fish.
- ▶ The fact that firms buy boats suggests that assuring quality is a key problem for non-integrated firms.

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 - ▶ Role of technology in reducing within-firm information asymmetries.
 - ▶ Kelley et al. (2023), de Rochambeau (2021).
 - ▶ Other types of incentive misalignment within firms.
 - ▶ Rigol and Roth (2023).

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 - ▶ Now common to attribute low productivity and low growth in developing countries to “bad management.”
- ▶ It's important, but in my view its lessons have been misinterpreted.
- ▶ My JEL review has a simple framework:
 - ▶ Firms have inherent capabilities, which must be home-grown.
 - ▶ Given their capabilities and market conditions, firms choose inputs, products, techniques, investments in learning.

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 2. Skills of managers, which are an input.
 3. Management practices, which are techniques chosen by entrepreneurs subject to constraints.
- ▶ *Management practices are not a primitive.*
 - ▶ The choice of management practices is a component of the general problem of choice of techniques (Van Reenen, 2011).

Management Practices (cont.)

- ▶ The (big!) contribution of this literature has been to improve measurement of this important set of technical choices.
 - ▶ World Management Survey (WMS) has systematically collected information on monitoring, performance targets, incentives (e.g. performance pay), operations.
 - ▶ Closed-ended questions have been added to large firm-level surveys in the U.S., Mexico, Pakistan, and other countries.
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 - ▶ SME-appropriate questions in McKenzie and Woodruff (2017).
- ▶ A great advantage of focusing on management practices is that they are applicable across a wide range of sectors and countries.
 - ▶ Enables cross-sector and cross-country comparisons.

Management Practices (cont.)

- ▶ Key question: are some management practices better than others?
 - ▶ Vertical view: yes, across contexts (Bloom et al., 2014).
 - ▶ Horizontal/contingency/design view: it depends on context, e.g. input, output markets, firms' know-how (Woodward, 1958).

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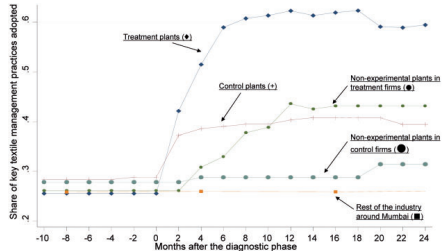
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- ▶ Ultimately an empirical question, not yet resolved.
 - ▶ Some practices, e.g. tracking inventories, seem clearly better (like offset pentagons).
 - ▶ Other cases, e.g. piece rates/performance pay, are less clear.
- ▶ Normally, if we see firms using different technologies, we don't assume that some are making mistakes.
 - ▶ We ask what constraints lead them to make the choices they do.
 - ▶ We should take a similar approach to management practices.

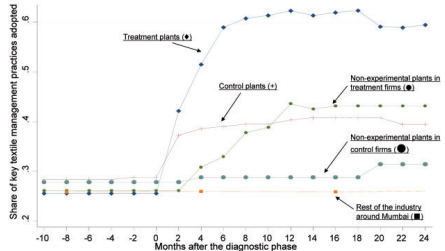
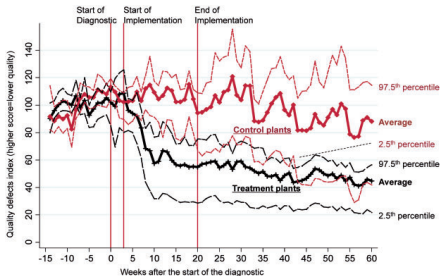
Management Practices (cont.)

- ▶ Bloom et al. (2013): consulting increases use of “modern” practices, improves performance.
- ▶ Randomized consulting among 17 Indian textile firms.
- ▶ 1-month diagnostic (all), 4-month implementation (treatment)
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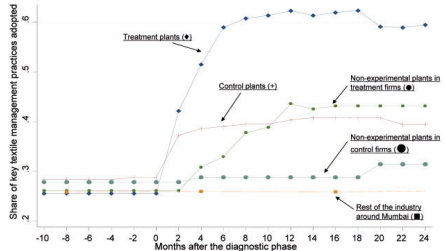
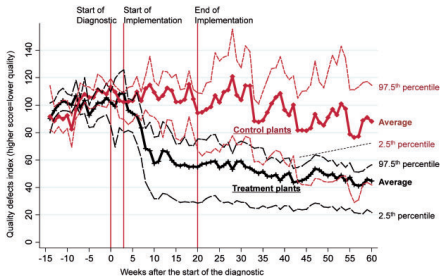
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Issues:

- ▶ Exclusion restriction.
- ▶ Timing.
- ▶ Benefits vs. costs.

Interpretation:

- ▶ Firms learned from the consultants.
- ▶ Jury is still out on causal effect of 38 practices and whether firms were leaving money on the table.

Management Practices (cont.)

- ▶ Some promising directions:
 - ▶ What are the effects of particular practices (or bundles of practices)?
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 - ▶ Are practices consistently good/bad across contexts?
 - ▶ For different input/output market conditions, firm capabilities.
 - ▶ What is the most effective way to deliver training/advice?
 - ▶ Standard errors are often large, estimates often not significant (McKenzie and Woodruff, 2014), even with average effects on profits/sales of 5-10% (McKenzie, 2021).
 - ▶ Need larger samples, more precise measurement, longer-term follow-ups.

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- ▶ In some sense, the pendulum is swinging too quickly.
 - ▶ The literature has not matured to the point where we have rigorously evidence-based advice to give.
- ▶ We need to hurry up!
 - ▶ Need lots more research on what works and doesn't work in industrial policy, broadly defined.
 - ▶ Quasi-experiments as well as experiments.

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